IN THE CLAIMS

Please cancel claims 1-20 and 46-53. Therefore, claims 21-45 remain for examination.

1-20. (Canceled)

21. (Currently Amended) A method for detecting strain in an article, comprising:

attaching a reflective strain gauge to a surface of an article, the strain gauge comprising an holographically-formed polymer dispersed liquid crystal (H-PDLC) film having layers of liquid crystal (LC) droplets in a matrix polymer and having are reflection or transmission grating capable of reflecting or transmitting light of a selected wavelength; and

illuminating the film with light and monitoring for a change in the reflected or transmitted light, said change associated with strain in the article.

22. (Original) The method of claim 21, wherein the change in the reflected light comprises a change in the wavelength of the reflected light.

23. (Original) The method of claim 21, wherein the change in the reflected light comprises a change in the intensity of the reflected light.

24. (Original) The method of claim 21, wherein said strain is the result of a compressive force.

25. (Original) The method of claim 21, wherein said strain is the result of a tensile force.

26. (Original) The method of claim 21, wherein the film is positioned such that when a tensile force is applied, the spacing between the layers contracts.

27. (Original) The method of claim 26, wherein the tensile force is applied along the long axis of the LC droplet layers.

28. (Original) The method of claim 21, wherein said shift is a blue shift of the reflected or transmitted light.

29. (Original) The method of claim 21, wherein the film is positioned such that when a tensile force is applied, the spacing between the layers expands.

30. (Original) The method of claim 29, wherein the tensile force is applied along a direction transverse to the long axis of the LC droplets layers.

31. (Original) The method of claim 21, wherein said shift is a red shift of the reflected or transmitted light.

32. (Original) The method of claim 21, wherein the step of illuminating the film comprises illuminating the film with polarized light.

33. (Original) The method of claim 32, wherein in the strained state the LC droplets form ellipsoids with long axes aligned parallel to an axis of an applied force, such that the refractive index parallel to said axis (n_e) is greater than the refractive index perpendicular to said axis (n_o).

34. (Original) The method of claim 33, wherein light polarized perpendicular to said axis is transmitted, and light polarized parallel to said axis is reflected.

35. (Original) The method of claim 21, wherein the matrix polymer is selected to have sufficient elasticity to sustain strain without failure, said strain proportional to the strain of the article.

36. (Original) The method of claim 21, wherein the LC layers are substantially parallel to the article surface.

37. (Original) The method of claim 21, wherein the LC layers are substantially perpendicular to the article surface.

38. (Original) The method of claim 21, wherein the layers are at an angle to the article surface.

39. (Original) The method of claim 21,wherein the step of monitoring the wavelength shift is accomplished by a technique selected from the group consisting of visual observation, photodiode observation and spectrophotometry..

40. (Original) The method of claim 21, wherein the film comprises multiple reflection gratings.

41. (Original) The method of claim 21, wherein the gauge is responsive to stresses applied in different directions.

42. (Original) The method of claim 40, wherein said multiple gratings are located within a single H-PDLC layer.

43. (Original) The method of claim 40, wherein said film comprises a plurality of H-PDLC layers and each said layer comprises at least one grating.

44. (Original) The method of claim 21, wherein the applied strain is in the range of up to about 21%.

45. (Original) The method of claim 21, wherein said film comprises aspected particles embedded in an elastic polymer, said aspected particles comprising an H-PDLC material comprising layer of LC droplets in a matrix polymer, wherein said aspected particles orient along a direction of an applied force when stressed.

46-53. (Canceled)